CLAIMS

What is claimed is:

1. A system comprising:

a first node that broadcasts a request for data; and

a second node having a first state associated with the data that defines the second node as an ordering point for the data, the second node providing a response to the first node that transfers the ordering point to the first node in response to the request for the data.

2. The system of claim 1, wherein the first node transitions to a second state associated with the data in response to receiving the response from the second node, the second state defining the first node as the ordering point for the data.

3. The system of claim 2, wherein the second state corresponds to a state of a cache line that contains the data, the second state enabling the first node to provide an ownership data response that includes a copy of the data to requests for the data.

4. The system of claim 2, wherein the first node comprises a processor having an associated cache that comprises plurality of cache lines, one of the cache lines having an address associated with the data, the second state identifying the one of the cache lines as the ordering point for the data in the system.

5. The system of claim 1, wherein the second node transitions from the first state to a transition state associated with migration of the ordering point to the first node.

6. The system of claim 5, wherein the second node comprises a processor having an associated cache that comprises a plurality of cache lines, one of the cache lines of the second node that contains the data transitioning from the first state to the transition state associated with migration of the ordering point to the first node.

7. The system of claim 5, further comprising a multi-processor system implementing a source broadcast protocol, the system further comprising a third node that issues a broadcast request that is received at the second node while in the transition state, the third node reissuing the broadcast request as a request employing

an associated forward progress protocol implemented in the system in response to receiving a conflict response from the second node.

8. The system of claim 7, wherein the forward progress protocol comprises a directory-based protocol.

9. The system of claim 1, wherein the first node provides an acknowledgment signal to the second node after receiving responses from other nodes in the system.

10. The system of claim 9, wherein the second node provides a signal to the first node indicating receipt of the acknowledgement signal.

11. The system of claim 1, wherein the request for the data comprises a request for the data requiring write permission.

12. The system of claim 11, wherein the request for the data further comprises one of a source broadcast read request or a source broadcast write request for the data, and the response from the second node comprises a corresponding ownership data response.

13. The system of claim 1, wherein each of the first and second nodes comprises a processor having an associated cache that comprises a plurality of cache lines, each cache line having a respective address that identifies associated data and state information that identifies a state of the associated data for the respective cache line, each of the processors being capable of communicating with each other via an interconnect.

14. The system of claim 13, wherein each processor further comprises a cache controller that controls the state of the data stored in the plurality of cache lines thereof, at least the cache controller of the first node further comprises a state engine capable of modifying the state information for the cache line associated with the data to a state that defines the cache line associated with the data as the ordering point based on the response provided by the second node.

15. A computer system, comprising:

a source processor that issues a broadcast request for desired data while having a first state associated with the desired data; and

an owner processor having an associated cache that includes the desired data in a cache line, the cache line having an associated state that defines a copy of the desired data as an ordering point for the desired data, the owner processor responding to the broadcast request with an ownership data response that includes the desired data, the source processor transitioning from the first state to a second state associated with the desired data based on the ownership data response, the second state defining the source processor as the ordering point for the desired data.

16. The system of claim 15, wherein the source processor further comprises a cache line that contains the desired data received from the owner processor, the cache line of the source processor that contains the desired data having an associated state that transitions to a second state in response to receiving the ownership data response from the owner processor, the second state defining the cache line of the source processor that contains the desired data as the ordering point for the data.

17. The system of claim 16, wherein the second state enables the source processor to respond to requests for the desired data by providing an ownership data response that includes a copy of the desired data.

18. The system of claim 17, wherein the state associated with the cache line of the owner processor transitions from a first state to a transition state in connection with providing the ownership data response to the source processor.

19. The system of claim 18, wherein the system employs a source broadcast protocol for controlling the broadcast request issued by the source processor and the response provided by the owner processor, the system further comprising a third processor that issues a broadcast request using the source broadcast protocol that is received at the owner processor while in the transition state, the third processor reissuing the request employing an associated forward progress protocol implemented in the system in response to receiving a conflict response from the owner processor.

20. The system of claim 19, wherein the forward progress protocol comprises a directory-based protocol.

21. The system of claim 15, wherein the source processor provides an acknowledgment signal to the owner processor after receiving a complete set of responses from the system, the acknowledgement signal enabling the owner processor to transition from a transition state to an invalid state.

22. The system of claim 21, wherein the owner processor provides a signal to the source processor indicating receipt of the acknowledgement signal.

23. The system of claim 15, wherein the owner processor provides a blocking signal to prevent a home node from responding with a copy of the desired data in response to receiving the broadcast request from the source processor.

24. A system, comprising:

means for broadcasting a request for data from a first processor node having a cache state associated with the requested data;

means for providing an ownership data response from a second processor node having a cache state that defines the second processor as a cache ordering point for the requested data; and

means for transferring the cache ordering point from the second processor node to the first processor node associated with the first processor node receiving the ownership data response from the second processor node.

25. The system of claim 24, further comprising means for providing a migration acknowledgment signal to acknowledge receipt of the ownership data response at the first processor node and for transitioning to a cache state at the first processor node that defines the first processor node as the cache ordering point.

26. The system of claim 25, further comprising means for acknowledging receipt of the migration acknowledgment signal by the second processor node.

27. The system of claim 24, wherein each of the means for broadcasting, the means for providing and the means for transferring employs a source broadcast protocol, the system further comprising means for reissuing a request in the system using a forward progress protocol in response to detecting a conflict while employing the source broadcast protocol.

28. A method comprising:

broadcasting from a source node a request for requested data;

providing an ownership data response from an owner node in response to the request from the source node; and

transitioning a state at the source node associated with the requested data from a first state to a second state in response to receiving the ownership data response, the second state defining the source node as a new cache ordering point.

29. The method of claim 28, further comprising providing a migration acknowledgment signal from the source node to acknowledge receipt of the ownership data response at the source node.

30. The method of claim 29, further comprising:

entering a transition state at the owner node in response to providing the ownership data response; and

releasing the owner node from the transition state in response to the migration acknowledgment signal.

31. The method of claim 30, wherein the source node and the owner node employ a source broadcast protocol, the method further comprising:

issuing a broadcast request for the requested data from a third node using the source broadcast protocol; and

reissuing the broadcast request from the third node as a request using a forward progress protocol in response to the owner node being in the transition state when the owner node receives the broadcast request issued by the third node.

32. The method of claim 29, further comprising providing an acknowledgment signal to the source node to acknowledge receipt of the migration acknowledgment signal at the owner node.

33. The method of claim 28, wherein the source node comprises a processor node that includes a cache having a plurality of cache lines, one of the cache lines of the processor node containing the requested data based on the ownership data response and having a state associated therewith, the state associated with the one of the cache lines defining the source node as the new cache ordering point.